

REMARKS

Claims 1 and 5 have been amended to recite that the anode is in contact with the membrane. Support for amended claims 1 and 5 can be found in Fig. 2, showing anode 41 in contact with membrane 43. Entry of this Amendment is respectfully requested. Claims 1, 2 and 5-7 are pending.

Response to Claim Rejections Under § 103

Claims 1, 2 and 5-7 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,387,238 to Merk et al in view of U.S. Patent No. 6,949,178 to Tennakoon et al. Applicants respectfully traverse.

The present claims relate to a method for the sterilizing/cleaning of an object with an aqueous solution of a peroxide, which comprises, *inter alia*, providing an electrolytic cell comprising an anode chamber including an anode, a cathode chamber including a gas cathode, a catholyte inlet and a catholyte outlet, a membrane separating the anode and cathode chambers, and a particulate solid acid catalyst comprising a polymer resin filling a space between the gas cathode and the membrane. Furthermore, the anode is in contact with the membrane (i.e., a zero gap constitution) so as to suppress an increase in cell voltage.

Merk discloses a method of forming peracetic acid in situ, as needed, for a variety of applications, including decontamination of medical devices and treatment of food products, wherein hydrogen peroxide is generated in an electrolysis unit by reduction of oxygen in water and then reacted with an acetyl donor, such as acetyl salicylic acid, to form peracetic acid. *See*, col. 4, lines 33-40. An advantage of the claimed invention is that the storage and shipment of concentrated and hazardous sterilants or precursors is avoided.

The electrolysis unit (10, 210, 310) of Merk has an anode (16, 216, 316) and a gas diffusion cathode (18, 218, 318). Air is fed to the cathode (18, 218) to generate hydrogen peroxide by electrolysis of oxygenated water. Further, a peracetic acid precursor, such as acetyl salicylic acid, reacts with the peroxide to form peracetic acid. An ion selective barrier (20, 220) separates the unit into two chambers, an anodic chamber (12, 212) and a cathodic chamber (14, 214). However, Merk does not disclose or suggest the anode being in contact with the membrane.

In addition, by selecting either a proton permeable membrane or an anion exchange membrane for the barrier, the peracetic acid may be formed in either an alkaline electrolyte in the cathodic chamber or in an acid electrolyte in the anode chamber, respectively. *See*, Abstract.

Tennakoon discloses a method whereby peracids are produced electrochemically at the cathode by (1) directly or indirectly supplying an organic acid to the cathode; (2) providing for proton flow across the PEM; and (3) supplying a source of oxygen gas to the gas diffusion cathode, wherein the gas diffusion cathode includes a gas diffusion layer and a catalyst layer. More particularly, electric current is passed through the anode and the gas diffusion cathode, which are separated by the PEM. Protonated organic acids or other peracid precursors that are provided to the anode, or formed at the anode, pass through the PEM reacting with oxygen (or peroxides) in the cathodic catalyst layer to generate the peracid product through oxygen reduction. Tennakoon does not disclose or suggest using a particulate solid acid catalyst packed in the chambers for the purpose of catalytic reaction.

Thus, one skilled in the art would not be motivated to modify the electrolytic cell of Merk to include the solid acid catalyst of Tennakoon because doing so would render Merk incapable of operating as originally intended (i.e., a two-chamber design permitting the option of forming

peracetic in either an alkaline electrolyte in the cathodic chamber or in an acid electrolyte in the anode chamber). Even if one skilled in the art were motivated to include the solid acid catalyst of Tennakoon in the electrolytic cell of Merk, which is not the case, a further modification of arranging the anode to contact the membrane would render Merk inoperable for its intended purpose.

Accordingly, Merk and Tennakoon fail to render obvious the present claims. Withdrawal of the rejection is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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